

## ENVIRONMENTAL AWARENESS AND PRO-ENVIRONMENTAL BEHAVIOR OF HIGH SCHOOL STUDENTS: GENDER AND RESIDENTIAL LOCALE AS DECISIVE FACTORS

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### ABSTRACT

*This investigation is aimed to bring out the critical role of gender and residential locale on environmental awareness and pro-environmental behavior of high school students. Data were collected from a stratified random sample of 320 students by administering two standardized instruments, viz., the Pro-environmental Behavior Scale and the Environmental Awareness Test. Analysis exposed the presence of significant difference in the pro-environmental behavior of the subjects based on their gender and residential locale. Neither the gender nor the locale, however, was found to discriminate the students on the basis of their environmental awareness. Gender and residential locale of the students were found to have a significant interaction effect on their environmental awareness and pro-environmental behavior. Significant positive correlation was detected between environmental awareness and pro-environmental behavior of high school students. While gender exerted a differential effect on the relationship between environmental awareness and pro-environmental behavior, the relationship was not affected by residential locale of the students.*

**KEYWORDS:** Pro-Environmental Behavior, Environmental Awareness, Interaction Effect & High School Students

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### INTRODUCTION

Unprecedented growth in population, uncontrolled consumption of natural resources, rapid urbanization, fast industrial and technological development coupled with injudicious planning without due regard to sustainable development has accelerated various changes leading to serious environmental problems (Zeng, Deng, Dong & Hu, 2016; Douglas, 2012; IPCC, 2007). The influence of environmental destruction on modern life has been a crucial problem since the beginning of the late 1960s with its increasing industrialization and surplus resource utilization. The environmental crisis humanity face today is indeed a crisis of maladaptive behavior and not a problem for technology to solve (Ogunjinmi & Oniya, 2016; Vlek & Steg, 2007). Solving the present ecological crises will require not only improved scientific awareness and technological changes, but also fundamental changes in the behavior of people, a change from over-dependence on natural environment to more environmentally responsible behavior.

These changes could be made happen only through a continuous life-long education for environment. The underlying purpose of such an education shall be the promotion of responsible environmental behavior at individual and societal level (UNESCO, 2014). The concepts and principles of environmental education are now common in educational policies and programmes at all levels across the world. The increasing recognition for environmental education in recent years has resulted in an associated increase in research to investigate the influence of awareness on responsible environmental behavior (Varoglu, Temel & Yilmaz, 2018; Kil, Holland, & Stein, 2014; Mc Ewen,

Clement, Gericke, Nyberg, Hagman & Landstrom, 2015; Evans et al., 2007; Bamberg, 2003 etc.), but mostly in western culture. Research studies in Indian context, which bring out clearly the relationship between environmental awareness and pro-environmental behavior of school adolescents, are not reported from Tamil culture, and hence the investigators have made a modest attempt to take up the present study.

## OBJECTIVES

The study has the following objectives in view:

- To compare the environmental awareness of high school students based on their gender.
- To compare the environmental awareness of high school students based on their residential locale.
- To find out the interaction effect of gender and residential locale on environmental awareness of high school students.
- To compare the pro-environmental behavior of high school students based on their gender.
- To compare the pro-environmental behavior of high school students based on their residential locale.
- To find out the interaction effect of gender and residential locale on pro-environmental behavior of high school students.
- To find out the relationship between environmental awareness and pro-environmental behavior of high school students.
- To find out the differential effect of gender and residential locale in the relationship between environmental awareness and pro-environmental behavior of high school students.

## HYPOTHESES

The following hypotheses were formulated for the study:

- Boys and girls in high schools will not differ significantly with regard to their environmental awareness.
- Rural and urban students in high schools will not differ significantly with regard to their environmental awareness.
- Gender and residential locale will not have any significant interaction effect on environmental awareness of high school students.
- Boys and girls in high schools will not differ significantly with regard to their pro-environmental behavior.
- Rural and urban students in high schools will not differ significantly with regard to their pro-environmental behavior.
- Gender and residential locale will not have any significant interaction effect on pro-environmental behavior of high school students.
- Environmental awareness of high school students will not be significantly correlated with their pro-environmental behaviour.
- Gender and residential locale will not have any significant differential effect on the correlation between environmental awareness and pro-environmental behavior of high school students.

## METHODOLOGY

Normative survey method was adopted for the present study. The study made use of a representative sample of 320 high school students selected on the basis of 'stratified random sampling technique' from the high schools of Thrissur district (State of Kerala, India). The sample consisted of 148 boys and 172 girls, the rural and urban representation being 187 and 133, respectively. The data pertained to environmental awareness and pro-environmental behavior were collected by using the Environmental Awareness Test (EAT) (Apsara & Arjunan, 2014) and the Pro-environmental Behavior Scale (PEBS) (Arjunan & Abraham, 2003), respectively. The EAT is a 40-item multiple choice test which covers 10 thrust areas of environmental concern. The EAT has a concurrent validity (with another established test) of 0.73, and a test-retest reliability of 0.82. The PEBS is a 30 item 3-point Likert type scale with an external validity (teacher rating as external criteria) of 0.66, and test-retest reliability of 0.79. The tools were administered on the sample in group situation under standardized conditions, their responses were collected in separate response sheets, and the total score on the PEBS and EAT were found out. The data thus obtained were subjected to analysis using appropriate statistical techniques and interpreted accordingly.

## RESULTS AND DISCUSSIONS

Table 1 presents the data and result of the *t*-test performed to compare the environmental awareness of high schools boys and girls.

The *t*-value estimated is not significant ( $t = 1.781$ ,  $p > .05$ ), showing that there is no true gender difference in the awareness of high school students about the environment and its forces. The hypothesis-1 (boys and girls in high schools will not differ significantly with regard to their environmental awareness) is, hence, accepted. Table 2 presents the data and result of the comparison of the environmental awareness of students from rural and urban locales.

The *t*-value obtained on comparing the environmental awareness of locale based sub-samples are not significant ( $t = 0.026$ ;  $p > .05$ ), revealing that the residential locale is not decisive in discriminating high school students on the basis of their environmental awareness. The hypothesis-2 (rural and urban students in high schools will not differ significantly with regard to their environmental awareness) is, hence, accepted. Table 3 presents the result of the two-way ANOVA conducted to find out the interaction effect of gender and locale on environmental awareness.

Though the *F*-values obtained for the sub-samples of gender ( $F = 1.658$ ;  $p > .05$ ) and locale ( $F = 0.006$ ;  $p > .05$ ) are not significant, that obtained for the interaction between gender and locale is significant ( $F = 5.581$ ;  $p < .05$ ), revealing the presence of significant interaction effect of gender and residential locale on environmental awareness of high school students. Scrutiny of the mean estimates for the groups showed that environmental awareness are in the order: Rural girls > Urban boys > Urban girls > Rural boys. The hypothesis-3 (gender and residential locale will not have any significant interaction effect on environmental awareness of high school students) is, therefore, discarded. Table 4 presents the data and result of the *t*-test performed to compare the pro-environmental behavior of high school boys and girls.

The *t*-value obtained is significant ( $t = 4.359$ ,  $p < .001$ ), showing that the boys and girls in our high schools differ significantly with respect to their environmentally responsible behavior. A closer observation of the mean estimates reveals that the girls surpass the boys in their environmentally responsible behavior. The hypothesis-4 (boys and girls in high schools will not differ significantly with regard to their pro-environmental behavior) is, therefore, rejected. The data and result of the comparison of the pro-environmental behavior in the rural and urban sub-samples are presented in table 5.

The result of the  $t$ -test shows that there exists a true difference between urban and rural students with respect to their pro-environmental behavior ( $t = 4.487$ ;  $p < .001$ ). Scrutiny of mean estimates for the groups shows that the rural students excel their urban counterparts in their ecologically friendly behavior. The hypothesis-5 (rural and urban students in high schools will not differ significantly with regard to their pro-environmental behavior) is, hence, rejected. Table 6 presents the result of the two-way ANOVA conducted find out the interaction effect of gender and locale on pro-environmental behavior.

The  $F$ -value obtained shows that there is a statistically significant interaction between the effects of gender and residential locale on eco-friendly behavior of high school students,  $F(1, 316) = 16.920$ ,  $p = .001$ . The mean estimate for the groups showed that the groups are in the order of Rural girls > Rural boys > Urban girls > Urban boys with respect to their environmentally responsible behavior. The hypothesis-6 (gender and residential locale will not have any significant interaction effect on pro-environmental behavior of high school students) is, therefore, rejected. The data and results pertained to the calculation of the coefficients of correlation between environmental awareness and pro-environmental behavior for the total sample and relevant sub-samples are given in table 7.

As evident from table 7, the estimated coefficients of correlation ( $r$ ) for the total group and sub-groups studied indicate that there is a significant positive relationship between the environmental awareness and pro-environmental behavior. The positive correlation between the variables in the total sample as well as the sub-samples shows that any increase in environmental awareness will be attended by a corresponding increase in environmentally friendly behavior. The Hypothesis-7 (environmental awareness of high school students will not be significantly correlated with their pro-environmental behavior) is, therefore, rejected. The data and result pertained to the comparison of the coefficients of correlation between environmental awareness (EA) and pro-environmental behavior (PEB) for the sub-samples are presented in table 8.

As obvious from table 8, the critical ratio (CR) obtained on comparing the correlations for the sub-samples bases on gender is significant at 0.05 level ( $CR = 2.07$ ;  $p < .05$ ), whereas the  $t$ -value worked out for the sub-samples based on locale is not significant ( $CR = 0.31$ ). This shows that the degree of association between environmental awareness and pro-environmental behavior is not the same for boys and girls. A closer observation of the estimated values of ' $r$ ' shows that the relationship is more marked in the case of boys than in the case of girls. In other words, the pro-environmental behavior of boys is found to be more influenced by their environmental awareness than that of girls. The rural and urban students do not differ significantly in their relationship between environmental awareness and pro-environmental behavior. The Hypothesis-8 (gender and residential locale will not have any significant differential effect on the correlation between environmental awareness and pro-environmental behavior of high school students) is, therefore, partially justified.

## CONCLUSIONS

The followings are the major conclusions of the study:

- Neither the gender nor the residential locale is decisive in discriminating high school students on the basis of their environmental awareness.
- Though the gender and residential locale have no significant main effect on the environmental awareness of high school students, these demographic factors exert significant interaction effect on their environmental awareness. The order of environmental awareness is rural girls > urban boys > urban girls > rural boys.

- There exists a significant gender difference in the pro-environmental behavior of high school students. Girls excel boys in their environmentally responsible behavior.
- Residential locale is a decisive factor in discriminating high school students on the basis of their pro-environmental behavior; the rural students surpass their urban counterparts in their eco-friendly behavior.
- Gender and residential locale of high school students have significant main effect and interaction effect on their pro-environmental behavior. The order of pro-environmental behavior is rural girls > rural boys > urban girls > urban boys.
- There exists significant, positive correlation between environmental awareness and pro-environmental behavior of high school students.
- The boys and girls in our high schools differ significantly in the degree of relationship between the environmental awareness and pro-environmental behavior, the relationship being stronger in boys than in girls.
- The locale of residence is not found to exert any influence on the relationship between environmental awareness and pro-environmental behavior of high school students.

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## APPENDIX

**Table 1: Comparison of the Environmental Awareness of Boys and Girls**

Groups	Statistical Indices				t-value	Sig.
	N	M	SD	SE <sub>M</sub>		
Boys	148	38.20	9.481	.779	1.781	NS
Girls	172	40.13	9.827	.749		

**Table 2: Comparison of the Environmental Awareness of Rural and Urban Students**

Groups	Statistical Indices				t-value	Sig.
	N	M	SD	SE <sub>M</sub>		
Rural	188	39.23	9.779	.713	0.026	NS
Urban	132	39.26	9.627	.838		

**Table 3: Interaction Effect of Gender and Locale on Environmental Awareness (Summary of Two-Way Anova)**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected	817.272a	3	272.424	2.947	.033
Intercept	463196.506	1	463196.506	5.0113	.000
GEN	153.246	1	153.246	1.658	.199
LOC	.570	1	.570	.006	.937
GEN *	515.844	1	515.844	5.581	.019
Error	29207.200	316	92.428		
<b>Total</b>	<b>522769.000</b>	<b>320</b>			
Corrected	30024.472	319			

a. R Squared = .027 (Adjusted R Squared = .018)

**Table 4: Comparison of the Pro-Environmental Behavior of Boys and Girls**

Groups	Statistical Indices				t-value	Sig.
	N	M	SD	SE <sub>M</sub>		
Boys	148	55.58	8.806	.724	4.359	.001
Girls	172	59.65	7.872	.600		

**Table 5: Comparison of the Pro-Environmental Behavior of Rural and Urban Students**

Groups	Statistical Indices				t-value	Sig.
	N	M	SD	SE <sub>M</sub>		
Rural	188	59.51	9.070	.661	4.487	.000
Urban	132	55.28	7.065	.615		

**Table 6: Interaction Effect of Gender and Locale on Pro-Environmental Behavior (Summary of Two-Way ANOVA)**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4168.903a	3	1389.634	22.942	.000
Intercept	987210.872	1	987210.872	1.6304	.000
GEN	1191.829	1	1191.829	19.676	.000
LOC	1466.506	1	1466.506	24.211	.000
GEN * LOC	1024.861	1	1024.861	16.920	.000
Error	19140.519	316	60.571		
<b>Total</b>	<b>1091107.000</b>	<b>320</b>			
Corrected Total	23309.422	319			

a. R Squared = .179 (Adjusted R Squared = .171)

**Table 7: Relationship between Environmental Awareness and Pro-Environmental Behavior**

Sample	N	r	SE <sub>r</sub>	r <sub>POP.05</sub>	r <sub>POP.01</sub>
Total	320	0.375*	0.048	0.28–0.47	0.25–0.50
Boys	148	0.474*	0.064	0.35–0.60	0.31–0.64
Girls	172	0.273*	0.071	0.13–0.41	0.09–0.46
Rural	188	0.358*	0.064	0.23–0.48	0.19–0.52
Urban	132	0.450*	0.069	0.31–0.59	0.27–0.63

\* Significant at 0.01 level

**Table 8: Comparison of the Coefficients of Correlation between PEB and EA for the Sub-Samples**

Groups	Sub-Samples	Statistical Indices			CR	Sig.
		N	r	z		
Gender	Boys	148	0.474	0.510	2.07	.05
	Girls	172	0.273	0.277		
Locale	Rural	188	0.358	0.377	0.96	NS
	Urban	132	0.450	0.485		

